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10/662,433	09/16/2003	Wen-Ching Chen		9840

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EXAMINER	
WILLIAMS, DON J	
ART UNIT	PAPER NUMBER
2878	

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Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/662,433	CHEN, WEN-CHING	
	Examiner	Art Unit	
	Don Williams	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 7 objected to because of the following informalities "has a has an area" appears to be a typographical error. It appears that it should be, "has an area". Appropriate correction is required.

Claim 8 objected to because of the following informalities, In claim 8 line 2, "cover with" should be replaced with "covers".

Claim 10 objected to because of the following informalities "the a metal solder ball" is not clear as to an antecedent basis. "The" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4, 8-10 are rejected because the phrase "liquefied jelly-like" renders the claims 1 and 8 indefinite because the claims include elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

Claim 1, paragraph 5 is poorly written. It is unclear how the thickness is obtained "relative to the top face of the semiconductor image sense chip". For examining purpose, thickness of the liquefied jelly-like material covering the top face of the

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semiconductor image sense chip will be considered equal the height of the conduct wire).

Claim 8, paragraph 14 is poorly written. It is unclear if the jelly-like material is different from the transparent layer. Is applicant claiming that the transparent layer is made of the jelly-like material. Please clarify. For examining purposes the claim will be treated as, "sealing resin layer".

Claims 2-4, and 9-10 are inherently indefinite due to their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Imamura et al (6,476,503 B1).

As to claim 1, Imamura et al disclose a semiconductor image sense chip (14); a conducting wire (16) extending from each of the multiple bonding pads (12) by wire bonding; liquefied jelly material (18b) and (18a) covering the top face of the semiconductor image sense chip (14) after drying up, the transparent layer (18) having a thickness being equal to a height of each of the conduct wire (16) relative to the top

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face of the semiconductor image sense chip (14), (see fig. 1 and fig. 2, column 7, lines 44-67, column 8, lines 1-29).

Claim 5-6, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Sakuyama et al (6,580,169 B2).

As to claim 5, Sakuyama et al disclose a semiconductor image sense chip (1) having multiple bumps (B) formed on a top face of the semiconductor image sense chip (1), the transparent layer (2) attached to the top face of the semiconductor image sense chip (1), the transparent layer (2) having a thickness being equal to that of each of the bumps (B), (see fig. 5b, column 20, lines 10-65).

As to claim 6, Sakuyama et al disclose transparent layer (2) is a transparent glass plate that include multiple penetration holes (23), each penetration hole (23) aligning with corresponding one of the multiple bumps (B) such that each bump (B) extends to a top face of the transparent glass plate, (see fig. 5b, column 20, lines 10-65).

As to claim 8, Sakuyama et al disclose inherent liquefied jelly-like material (22) and (21) covering the top face of the semiconductor image sense chip (1) and forming a transparent layer (2) on the top face of the semiconductor image sense chip (1) after drying up, (see fig. 5b, column 3, lines 25-65, column 4, lines 1-65, column 8, lines 54-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imamura et al in view of Horiuchi et al (6,731,010 B2).

As to claim 2, Imamura et al disclose a top face (18) ground and burnished to form an inherent plane that is parallel to the top face of the semiconductor image sense chip (14), (see fig. 1 and fig. 2, column 7, lines 43-67, column 8, lines 1-29). Imamura et al fail to disclose a periphery covered by a shelter. Horiuchi et al disclose a shelter (30).

It would have been obvious for one ordinary skill in the art to modify Imamura et al to include a shelter (30) as disclosed by Horiuchi et al to form a periphery shelter to prevent light penetration and eliminate image quality distortion into the chip scale package structure, (see fig. 3A, column 6, lines 14-37).

As to claim 3, Imamura et al disclose metal solder balls (20a) planted on free ends (20) of each of the conduct wires (16). Imamura et al fail to disclose a flexible printed circuit board having a window. Horiuchi et al disclose a flexible printed circuit board (23) having a window (58).

It would have been obvious for one ordinary skill in the art to modify Imamura et al to include a flexible printed circuit board (23) having a window (58) and multiple soldering points electrically connecting the conduct wires to the flexible printed circuit

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board (23) as disclose by Horiuchi et al to increase and improve signal transmission to the semiconductor image sense chip, (see fig. 9A – 9D, column 11, lines 1-65).

As to claim 4, Imamura et al fail to teach second solder points. Imamura et al disclose pin wires.

It would have been obvious for one ordinary skill in the art to arrange pin wires (84) in to an array of electrical components in order to increase the area of the flexible circuit board and improve signal transmission throughout the semiconductor image sense chip, (see fig. 45A and fig. 45B, column 21, lines 46-62).

Claims 7, and 10 are rejected under 35 U.S.C.103(a) as being unpatentable over Sakuyama et al in view of Horiuchi et al (6,731,010 B2).

As to claim 7, Sakuyama et al disclose transparent layer (2), metal solder ball (10a), multiple bumps (Ba) and (Bb), a semiconductor image sense chip (1), and first solder points (10a) and second solder points (10b), (see fig. 6a – 6f, column 21, lines 13-67, column 22, lines 1-27). Sakuyama et al fail to disclose a flexible circuit board and a window. Horiuchi et al disclose a flexible printed circuit board (23) having a window (58).

It would have been obvious for one ordinary skill in the art to modify Sakuyama et al to include a flexible printed circuit board (23) having a window (58) and multiple soldering points electrically connecting the conduct wires to the flexible printed circuit board (23) as disclose by Horiuchi et al to increase the area of the flexible circuit board

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and improve signal transmission throughout the semiconductor image sense chip, (see fig. 9A – 9D, column 11, lines 1-65).

As to claim 10, Sakuyama et al disclose metal solder balls (B) and multiple bumps (10). Sakuyama et al fail to disclose a flexible printed circuit board and a window. Horiuchi et al disclose a flexible printed circuit board (23) having a window (58).

It would have been obvious for one ordinary skill in the art to modify Imamura et al to include a flexible printed circuit board (23) having a window (58) and multiple soldering points electrically connecting the conduct wires to the flexible printed circuit board (23) as disclose by Horiuchi et al to increase the area of the printed circuit board and improve signal transmission throughout the semiconductor image sense chip, (see fig. 9A – 9D, column 11, lines 1-65).

Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuyama et al in view Imamura and Horiuchi.

As to claim 9, Sakuyama et al disclose a transparent layer (2). Sakuyama et al fail to teach a top face ground and burnished and a shelter. Imamura et al disclose an inherent top face ground and burnished. Horiuchi et al disclose a shelter (30).

It would have been obvious for one ordinary skill in the art to modify Sakuyama et al to include a top face ground and burnished to form a parallel plane relative to the top face of the semiconductor image sense chip as disclose by Imamura et al to improve

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the electrical signal, precise leveling or mating contact between the surfaces, and alignment of electrical components, (see fig. 1, and fig. 2, column 7, lines 43-65).

It would have been obvious for one ordinary skill in the art to modify Sakuyama et al to include a shelter (30) as disclosed by Horiuchi et al to form a periphery to prevent light penetration and eliminate image quality distortion into the chip scale package structure, (see fig. 3A, column 6, lines 14-37).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Don Williams whose telephone number is 571-272-8538. The examiner can normally be reached on 8:30a.m. to 5:30a.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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